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ECE 331 Project 1

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```
Ending:
    li $v0, 4
    la $a0, ClosingPara
    syscall
    la $s1, intarray
    la $s2, arrayPrime
    la $s3, arrayComposite
    li $v0, 10
    syscall
```

```
R11 [t3] = 0
R12 [t4] = 1
R13 [t5] = 0
R14 [t6] = 0
R15 [t7] = 0
R16 [s0] = a
R17 [s1] = 10010000
R18 [s2] = 10010028
R19 [s3] = 1001003c
R20 [s4] = 0
R21 [s5] = 14
```

Address of Intarray (10010000) is stored in \$s1. Address of arrayPrime (10010028) is stored in \$s2. The difference between two address is 40 bytes = 10 words which is the same length of our Intarray. The difference between address of arrayComposite and arrayPrime is 20 bytes = 5 words which is also the same length of our arrayPrime.

```
User data segment [10000000]..[10040000]
[10000000]..[1000ffff] 00000000
[10010000] 0000000007 0000000016 0000000023 0000000040
.
[10010010] 0000000011 0000000039 0000000037 0000000010
.
[10010020] 0000000002 0000000018 0000000007 0000000023
.
[10010030] 0000000011 0000000037 0000000002 0000000016
.
[10010040] 0000000040 0000000039 0000000010 0000000018
.
[10010050] 0000000010 0757932064 1411391550 0544434536
```

Console

```
7 16 23 40 11 39 37 10 2 18
PrimeArray = { 7 23 11 37 2 }
CompositeArray = { 16 40 39 10 18 }
```

In the picture above you can see the decimal values of each address and register as well as a console output for the original array and the Prime and Composite Array.

Start of Address of IntArray = 10010000

Start of Address of arrayPrime = 10010028

Start of Address of arrayComposite = 1001003c

Also note that in this project I did not use stack that was initialized in the given code. It turns out that I did not need them, instead I used arguments for functions and returned values.

Problems Encountered:

- I did not know how to debug using step by step process in Mips so I printed out everything on the console instead, but I learned how to do it later on during office hours
- Trouble with setting arguments and return values
- Understanding between jump and jump + link
- Looping with offset
- Setting values to indices in the new array

Sources:

<http://courses.cs.vt.edu/~cs2505/spring2010/Notes/pdf/T23.MIPSArrays.pdf>

<https://www.youtube.com/watch?v=Vb8kuvxc4NE>

https://github.com/alex_dantas/mips-examples/blob/master/004-is_prime.s